

DECLARATION OF Dr. Randell L. Mills

I, Randell L. Mills, declare and state as follows:

1. I am the founder and CEO of BlackLight Power, Inc., located at 493 Old Trenton Road, Cranbury, New Jersey 08512.
2. I majored in chemistry and received my bachelor of arts degree, *summa cum laude* and Phi Beta Kappa, from Franklin & Marshall College in 1982. I received a medical degree from Harvard Medical School in 1986. While attending Harvard Medical School, I consecutively spent a year taking courses in advanced electrical engineering at the Massachusetts Institute of Technology. I have had significant academic training in biology, chemistry, mathematics and physics.
3. I began my research in the field of energy technology over ten years ago. I have authored, co-authored or collaborated on numerous publications, reports and presentations at scientific meetings in the field of energy technology and novel hydrogen chemistry, as shown in the attachment hereto.
4. I am fully qualified to conduct the research that led to the discovery and development of BlackLight's lower-energy hydrogen technology.
5. I personally conducted and/or supervised the experiments shown in the attached article entitled "Spectral Emission of Fractional Quantum Energy Levels of Atomic Hydrogen from a Helium-Hydrogen Plasma and the Implications for Dark Matter." Dr. Paresh Ray, Dr. Ying Lu, and T. Onuma assisted me in preparing the spectroscopy.

6. Spectral lines have been used for over 100 years to confirm the energy states of the hydrogen atom, which led to the atomic theories of Bohr, Schrodinger, and Heisenberg. The extreme ultraviolet spectroscopic data presented in the attached article conclusively confirm the existence of lower-energy hydrogen having fractional quantum states $H(1/p)$, where p is an integer. The reaction vessel only contained hydrogen and helium catalyst. All of the spectral lines for helium and ordinary hydrogen are well known and documented. The new emission lines shown in the figures included in the article were identified at energies of $q/13.6\text{eV}$, where $q = 1, 2, 3, 4, 6, 7, 8, 9$ and 11 . The intensity of the new emission lines increased over time as the concentration of lower-energy hydrogen increased during the reaction in the reaction vessel, which again conclusively confirm the existence lower-energy hydrogen.
7. As shown in Table 1 of the attached article, my predicted peaks for the energy of reaction for formation of lower-energy hydrogen closely matched the experimentally observed peaks to a remarkable three significant figures.
8. As shown in Table 8 of the attached article, my predicted peaks for the energy of reaction for formation of lower-energy hydrogen and other such transitions closely matched the peaks observed from the interstellar medium and Sun.
9. I also personally conducted and/or supervised the experiments shown in the attached article entitled "Spectroscopic Identification of a Novel Catalytic Reaction of Potassium and Atomic Hydrogen and the Hydride Ion Product." Dr. Paresh Ray, Dr. Ying Lu, and T. Onuma assisted me in preparing the spectroscopy.

10. The extreme ultraviolet spectroscopic data presented in the attached article and shown in Figure 3 conclusively show that intense extreme ultraviolet (EUV) emission was observed from atomic hydrogen and an atomized catalyst that remarkably formed a plasma in a cell that was only heated to moderate temperatures with no high voltage source. No emission was observed in the case of the control noncatalysts.
11. The extreme ultraviolet spectroscopic data presented in the attached article and shown in Figure 4 conclusively show that emission was observed from K^{3+} that confirmed the resonant nonradiative energy transfer of $3 \cdot 27.2 \text{ eV}$ from atomic hydrogen to atomic potassium catalyst which ionized to K^{3+} .
12. The extreme ultraviolet spectroscopic data presented in the attached article and shown in Figure 8 conclusively show the spectroscopic observation of the predicted $H^-(1/4)$ hydride ion of hydrogen catalysis by potassium catalyst at 110 nm corresponding to its predicted binding energy of 11.2 eV which matches to three significant figures.
13. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

By


Dr. Randell L. Mills

Date:

6/8/01

Publications:

1. R. Mills, P. Ray, Spectral Emission of Fractional Quantum Energy Levels of Atomic Hydrogen from a Helium-Hydrogen Plasma and the Implications for Dark Matter, Int. J. Hydrogen Energy, submitted.
2. R. Mills, P. Ray, Spectroscopic Identification of a Novel Catalytic Reaction of Potassium and Atomic Hydrogen and the Hydride Ion Product, Int. J. Hydrogen Energy, submitted.
3. R. Mills, "BlackLight Power Technology-A New Clean Hydrogen Energy Source with the Potential for Direct Conversion to Electricity", Proceedings of the National Hydrogen Association, 12 th Annual U.S. Hydrogen Meeting and Exposition, *Hydrogen: The Common Thread*, The Washington Hilton and Towers, Washington DC, (March 6-8, 2001), pp. 671-697.
4. R. Mills, W. Good, A. Voigt, Jinquan Dong, "Minimum Heat of Formation of Potassium Iodo Hydride", Int. J. Hydrogen Energy, in press.
5. R. Mills, "Spectroscopic Identification of a Novel Catalytic Reaction of Atomic Hydrogen and the Hydride Ion Product", Int. J. Hydrogen Energy, in press.
6. R. Mills, N. Greenig, S. Hicks, "Optically Measured Power Balances of Anomalous Discharges of Mixtures of Argon, Hydrogen, and Potassium, Rubidium, Cesium, or Strontium Vapor", Int. J. Hydrogen Energy, in progress.
7. R. Mills, "The Grand Unified Theory of Classical Quantum Mechanics", Global Foundation, Inc. Orbis Scientiae entitled *The Role of Attractive and Repulsive Gravitational Forces in Cosmic Acceleration of Particles The Origin of the Cosmic Gamma Ray Bursts*, (29th Conference on High Energy Physics and Cosmology Since 1964) Dr. Behram N. Kursunoglu, Chairman, December 14-17, 2000, Lago Mar Resort, Fort Lauderdale, FL, in press.
8. R. Mills, "The Grand Unified Theory of Classical Quantum Mechanics", Int. J. Hydrogen Energy, submitted.
9. R. Mills and M. Nansteel, "Anomalous Argon-Hydrogen-Strontium Discharge", IEEE Transactions on Plasma Science, submitted.
10. R. Mills, B. Dhandapani, M. Nansteel, J. He, A. Voigt, "Identification of Compounds Containing Novel Hydride Ions by Nuclear Magnetic Resonance Spectroscopy", Int. J. Hydrogen Energy, in press.
11. R. Mills, "BlackLight Power Technology-A New Clean Energy Source with the Potential for Direct Conversion to Electricity", Global Foundation International Conference on "Global Warming and Energy Policy", Dr. Behram N. Kursunoglu, Chairman, Fort Lauderdale, FL, November 26-28, 2000, in press.

12. R. Mills, The Nature of Free Electrons in Superfluid Helium--a Test of Quantum Mechanics and a Basis to Review its Foundations and Make a Comparison to Classical Theory, Int. J. Hydrogen Energy, in press.
13. R. Mills, M. Nansteel, and Y. Lu, "Anomalous Hydrogen-Strontium Discharge", European Journal of Physics D, submitted.
14. R. Mills, J. Dong, Y. Lu, "Observation of Extreme Ultraviolet Hydrogen Emission from Incandescently Heated Hydrogen Gas with Certain Catalysts", Int. J. Hydrogen Energy, Vol. 25, (2000), pp. 919-943.
15. R. Mills, "Observation of Extreme Ultraviolet Emission from Hydrogen-KI Plasmas Produced by a Hollow Cathode Discharge", Int. J. Hydrogen Energy, Vol. 26, No. 6, (2001), pp. 579-592.
16. R. Mills, "Temporal Behavior of Light-Emission in the Visible Spectral Range from a Ti-K₂CO₃-H-Cell", Int. J. Hydrogen Energy, Vol. 26, No. 4, (2001), pp. 327-332.
17. R. Mills, T. Onuma, and Y. Lu, "Formation of a Hydrogen Plasma from an Incandescently Heated Hydrogen-Catalyst Gas Mixture with an Anomalous Afterglow Duration", Int. J. Hydrogen Energy, in press.
18. R. Mills, M. Nansteel, and Y. Lu, "Observation of Extreme Ultraviolet Hydrogen Emission from Incandescently Heated Hydrogen Gas with Strontium that Produced an Anomalous Optically Measured Power Balance", Int. J. Hydrogen Energy, Vol. 26, No. 4, (2001), pp. 309-326.
19. R. Mills, *The Grand Unified Theory of Classical Quantum Mechanics*, January 2000 Edition, BlackLight Power, Inc., Cranbury, New Jersey, Distributed by Amazon.com.
20. R. Mills, B. Dhandapani, N. Greenig, J. He, "Synthesis and Characterization of Potassium Iodo Hydride", Int. J. of Hydrogen Energy, Vol. 25, Issue 12, December, (2000), pp. 1185-1203.
21. R. Mills, "Novel Inorganic Hydride", Int. J. of Hydrogen Energy, Vol. 25, (2000), pp. 669-683.
22. R. Mills, B. Dhandapani, M. Nansteel, J. He, T. Shannon, A. Echezuria, "Synthesis and Characterization of Novel Hydride Compounds", Int. J. of Hydrogen Energy, Vol. 26, No. 4, (2001), pp. 339-367.
23. R. Mills, "Highly Stable Novel Inorganic Hydrides", Journal of Materials Research, submitted.
24. R. Mills, "Novel Hydrogen Compounds from a Potassium Carbonate Electrolytic Cell", Fusion Technology, Vol. 37, No. 2, March, (2000), pp. 157-182.
25. R. Mills, "The Hydrogen Atom Revisited", Int. J. of Hydrogen Energy, Vol. 25, Issue 12, December, (2000), pp. 1171-1183.
26. Mills, R., Good, W., "Fractional Quantum Energy Levels of Hydrogen", Fusion Technology, Vol. 28, No. 4, November, (1995), pp. 1697-1719.
27. Mills, R., Good, W., Shaubach, R., "Dihydrino Molecule Identification", Fusion Technology, Vol. 25, 103 (1994).

28. R. Mills and S. Kneizys, Fusion Technol. Vol. 20, 65 (1991).

Test Reports:

Numerous test reports are available from BlackLight Power (e.g. V. Noninski, Fusion Technol., Vol. 21, 163 (1992); Niedra, J., Meyers, I., Fralick, G. C., and Baldwin, R., "Replication of the Apparent Excess Heat Effect in a Light Water-Potassium Carbonate-Nickel Electrolytic Cell, NASA Technical Memorandum 107167, February, (1996). pp. 1-20.; Niedra, J., Baldwin, R., Meyers, I., NASA Presentation of Light Water Electrolytic Tests, May 15, 1994; Haldeman, C. W., Savoye, G. W., Iseler, G. W., Clark, H. R., MIT Lincoln Laboratories Excess Energy Cell Final report ACC Project 174 (3), April 25, 1995; Peterson, S., H., Evaluation of Heat Production from Light Water Electrolysis Cells of HydroCatalysis Power Corporation, Report from Westinghouse STC, 1310 Beulah Road, Pittsburgh, PA, February 25, 1994; Craw-Ivanco, M. T.; Tremblay, R. P.; Boniface, H. A.; Hilborn, J. W.; "Calorimetry for a Ni/K₂CO₃ Cell", Atomic Energy Canada Limited, Chemical Engineering Branch, Chalk River Laboratories, Chalk River, Ontario, June 1994; Nesterov, S. B., Kryukov, A. P., Moscow Power Engineering Institute Affidavit, February, 26, 1993; Jacox, M. G., Watts, G. R., "The Search for Excess Heat in the Mills Electrolytic Cell", Idaho National Engineering Laboratory, EG&G Idaho, Inc., Idaho Falls, Idaho, 83415, January 7, 1993; Gernert, N., Shaubach, R. M., Mills, R., Good, W., "Nascent Hydrogen: An Energy Source," Final Report prepared by Thermacore, Inc., for the Aero Propulsion and Power Directorate, Wright Laboratory, Air Force Material Command (ASC), Wright-Patterson Air Force Base, Contract Number F33615-93-C-2326, May, (1994); Phillips, J., Smith, J., Kurtz, S., "Report On Calorimetric Investigations Of Gas-Phase Catalyzed Hydrino Formation" Final report for Period October-December 1996", January 1, 1997, A Confidential Report submitted to BlackLight Power, Inc. provided by BlackLight Power, Inc., Great Valley Corporate Center, 41 Great Valley Parkway, Malvern, PA 19355; B. N. Popov, "Electrochemical Characterization of BlackLight Power, Inc. MH as Electrodes for Li-ion Batteries, Dept. of Chemical Engineering, University of South Carolina, February 6, 2000; Scores of Independent Tests of BlackLight Power's Novel Hydride Compounds from over 20 Independent Testing Laboratories.)

Meetings:

1. R. Mills, J. He, "Spectroscopic Identification of a Novel Catalytic Reaction of Atomic Hydrogen and the Hydride Ion Product", National Hydrogen Association, 12 th Annual U.S. Hydrogen Meeting

- and Exposition, *Hydrogen: The Common Thread*, The Washington Hilton and Towers, Washington DC, (March 6-8, 2001).
2. R. Mills, B. Dhandapani, M. Nansteel, N. Greenig, S. Hicks, J. Dong, "Optically Measured Power Balances of Anomalous Discharges of Mixtures of Argon, Hydrogen, and Potassium, Rubidium, Cesium, or Strontium Vapor", National Hydrogen Association, 12 th Annual U.S. Hydrogen Meeting and Exposition, *Hydrogen: The Common Thread*, The Washington Hilton and Towers, Washington DC, (March 6-8, 2001).
 3. R. Mills, M. Nansteel, N. Greenig, S. Hicks, "BlackLight Power Technology-A New Clean Energy Source with the Potential for Direct Conversion to Electricity", National Hydrogen Association, 12 th Annual U.S. Hydrogen Meeting and Exposition, *Hydrogen: The Common Thread*, The Washington Hilton and Towers, Washington DC, (March 6-8, 2001).
 4. R. Mills, B. Dhandapani, M. Nansteel, J. He, A. Voigt, "Identification of Compounds Containing Novel Hydride Ions by Nuclear Magnetic Resonance Spectroscopy", National Hydrogen Association, 12 th Annual U.S. Hydrogen Meeting and Exposition, *Hydrogen: The Common Thread*, The Washington Hilton and Towers, Washington DC, (March 6-8, 2001).
 5. R. Mills, "BlackLight Power Technology-A New Clean Energy Source with the Potential for Direct Conversion to Electricity", *The 8 th Annual Emerald Groundhog Day Investment Forum*, February 1, 2001, Wyndham Franklin Plaza Hotel, Philadelphia, PA, Organized by Emerald Asset Management, Lancaster, PA.
 6. R. Mills, "The Grand Unified Theory of Classical Quantum Mechanics", Global Foundation, Inc. Orbis Scientiae entitled *The Role of Attractive and Repulsive Gravitational Forces in Cosmic Acceleration of Particles The Origin of the Cosmic Gamma Ray Bursts*, (29th Conference on High Energy Physics and Cosmology Since 1964) Dr. Behram N. Kursunoglu, Chairman, December 14-17, 2000, Lago Mar Resort, Fort Lauderdale, FL.
 7. R. Mills, "BlackLight Power Technology-A New Clean Energy Source with the Potential for Direct Conversion to Electricity", Global Foundation, Inc. conference entitled *Global Warming and Energy Policy*, Fort Lauderdale, FL, November 26-28, 2000.
 8. R. Mills, B. Dhandapani, N. Greenig, J. He, J. Dong, Y. Lu, and H. Conrads, "Formation of an Energetic Plasma and Novel Hydrides from Incandescently Heated Hydrogen Gas with Certain Catalysts", August National ACS Meeting (220th ACS National Meeting, Washington, DC, (August 20-24, 2000)).
 9. R. Mills, J. He, and B. Dhandapani, "Novel Alkali and Alkaline Earth Hydrides", August National ACS Meeting (220th ACS National Meeting, Washington, DC, (August 20-24, 2000)).
 10. R. Mills, B. Dhandapani, N. Greenig, J. He, J. Dong, Y. Lu, and H. Conrads, "Formation of an Energetic Plasma and Novel Hydrides from Incandescently Heated Hydrogen Gas with Certain

Catalysts", June ACS Meeting (29th Northeast Regional Meeting, University of Connecticut, Storrs, CT, (June 18-21, 2000)).

11. Mills, J. Dong, N. Greenig, and Y. Lu, "Observation of Extreme Ultraviolet Hydrogen Emission from Incandescently Heated Hydrogen Gas with Certain Catalysts", 219 th National ACS Meeting, San Francisco, California, (March 26-30, 2000).
12. R. Mills, B. Dhandapani, N. Greenig, J. He, J. Dong, Y. Lu, and H. Conrads, "Formation of an Energetic Plasma and Novel Hydrides from Incandescently Heated Hydrogen Gas with Certain Catalysts", 219 th National ACS Meeting, San Francisco, California, (March 26-30, 2000).
13. R. Mills, "Novel Hydride Compound", 219 th National ACS Meeting, San Francisco, California, (March 26-30, 2000).
14. R. Mills, J. He, and B. Dhandapani, "Novel Alkali and Alkaline Earth Hydrides", 219 th National ACS Meeting, San Francisco, California, (March 26-30, 2000).
15. R. Mills, J. Dong, N. Greenig, and Y. Lu, "Observation of Extreme Ultraviolet Hydrogen Emission from Incandescently Heated Hydrogen Gas with Certain Catalysts", National Hydrogen Association, 11 th Annual U.S. Hydrogen Meeting, Vienna, VA, (February 29-March 2, 2000).
16. R. Mills, B. Dhandapani, N. Greenig, J. He, J. Dong, Y. Lu, and H. Conrads, "Formation of an Energetic Plasma and Novel Hydrides from Incandescently Heated Hydrogen Gas with Certain Catalysts", National Hydrogen Association, 11 th Annual U.S. Hydrogen Meeting, Vienna, VA, (February 29-March 2, 2000).
17. R. Mills, "Novel Hydride Compound", National Hydrogen Association, 11 th Annual U.S. Hydrogen Meeting, Vienna, VA, (February 29-March 2, 2000).
18. R. Mills, J. He, and B. Dhandapani, "Novel Alkali and Alkaline Earth Hydrides", National Hydrogen Association, 11 th Annual U.S. Hydrogen Meeting, Vienna, VA, (February 29-March 2, 2000).
19. R. Mills, J. Dong, Y. Lu, J. Conrads, "Observation of Extreme Ultraviolet Hydrogen Emission from Incandescently Heated Hydrogen Gas with Certain Catalysts", 1999 Pacific Conference on Chemistry and Spectroscopy and the 35th ACS Western Regional Meeting, Ontario Convention Center, California, (October 6-8, 1999).
20. R. Mills, "Novel Hydride Compound", 1999 Pacific Conference on Chemistry and Spectroscopy and the 35th ACS Western Regional Meeting, Ontario Convention Center, California, (October 6-8, 1999).
21. R. Mills, B. Dhandapani, N. Greenig, J. He, "Synthesis and Characterization of Potassium Iodo Hydride", 1999 Pacific Conference on Chemistry and Spectroscopy and the 35th ACS Western Regional Meeting, Ontario Convention Center, California, (October 6-8, 1999).

22. R. Mills, J. He, and B. Dhandapani, "Novel Hydrogen Compounds", 1999 Pacific Conference on Chemistry and Spectroscopy and the 35th ACS Western Regional Meeting, Ontario Convention Center, California, (October 6-8, 1999).
23. R. Mills, "Excess Heat Production by the Electrolysis of an Aqueous Potassium Carbonate Electrolyte", August 1991 meeting of the American Chemical Society, NY, NY.

Other Mills publications:

A Novel Cancer Therapy Using a Mossbauer-Isotope Compound, Randell L. Mills, Carl W. Walter, Lata Venkataraman, Kevin Pang, John Farrell, *Nature*, 336,787, (1988).

On the Potentialities of Nuclear Gamma Resonance (Mossbauer Effect) Spectroscopy as a New, Low Dose Approach to Cancer Radiation Therapy, W.M. Reiff, R.L. Mills, J.J. Farrell, The Proceedings of the International Conference on the Applications of the Mossbauer Effect, ICAME 1989, Budapest, Hungary (Hyperfine Interactions 1990).